



## Teaching medical ethics: problem-based learning or small group discussion?

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### **Abstract**

Lecture is the most common teaching method used in ethics education, while problem-based learning (PBL) and small group discussion (SGD) have been introduced as more useful methods. This study compared these methods in teaching medical ethics.

Twenty students (12 female and 8 male) were randomly assigned into two groups. The PBL method was used in one group, and the other group was taught using the SGD method. Twenty-five open-ended questions were used for assessment and at the end of the course, a course evaluation sheet was used to obtain the students' views about the advantages and disadvantages of each teaching method, their level of satisfaction with the course, their interest in attending the sessions, and their opinions regarding the effect of teaching ethics on students' behaviors. The mean score in the PBL group ( $16.04 \pm 1.84$ ) was higher than the SGD group ( $15.48 \pm 2.01$ ). The satisfaction rates in the two groups were  $3.00 \pm 0.47$  and  $2.78 \pm 0.83$  respectively. These differences were not statistically significant.

Since the mean score and satisfaction rate in the PBL group were higher than the SGD group, the PBL method is recommended for ethics education whenever possible.

**Keywords:** *Medical ethics, Medical education, Problem-based learning, Small group discussion*

### **Introduction**

Medical ethics is taught using traditional methods in many universities (1). It can be argued that medical ethics is a collection of behaviors and if it is taught through traditional methods, it may not change the students' attitudes and practice satisfac-

tion. Therefore, departments of medical ethics have showed an interest in using student-centered methods. Student-centered approaches to learning enable students to distinguish ethical dilemmas, solve problems and make proper decisions (2-4).

It is known that problem based learning (PBL) is a desirable method for teaching and learning in medical ethics. It is desirable, because the nature of ethical enquiry is highly compatible with the learning processes which characterize PBL (5). Learning ethics in small groups is widely accepted and is practiced in some universities (1, 6-9). On the other hand, Tysinger et al. suggested a combined lecture/small group discussion (SGD) in teaching ethics because it offers the advantage of systematically covering the chosen breadth of theory and the chosen range of common moral problems in medicine (10). We did not find studies that compared PBL and SGD methods, but we believe that problem based learning is more complex and time consuming than SGD. In addition problem based learning requires more resources that may not be available in all medical schools.

Medical ethics was a part of the curriculum for medical students in traditional Iranian medicine in Medieval Times, and great Iranian physicians have paid special attention to ethics in their practice, teaching and manuscripts. When the Faculty of Medicine was first established in Tehran University in 1934, teaching medical ethics comprised a part of medical students' education courses (11). In recent years, there has been an increased emphasis on classic ethics education and nowadays ethics is taught in all medical universities of Iran (12).

In Qom University of Medical Sciences, the ethics course is offered to medical students during their fourth year. All medical universities in Iran are instructed on the components of the ethics curriculum by the Ministry of Health and Medical Education. The contents of the course are planned for 16 sessions as seen in Table 1.

Table 1. The headings of the ethics course in Iran

Session	Heading
1	Introduction, history and importance of ethics
2	Ethics in Islam and the basic theories of ethics
3	Professionalism
4	Four principles of ethics
5	physician-patient and physician- colleagues relationship
6	Confidentiality and privacy
7	Informed consent
8	Patients' rights
9	Education ethics
10	Research ethics
11	Conflict of interests
12	Resource allocation
13	Medical errors and physicians responsibility
14	Beginning of life ethical issues
15	End of life ethical issues
16	New technologies and problems in medicine

Up to the present time, ethics has been taught using the lecture method in Qom University of Medical Sciences. It is clear that the traditional systems for teaching ethics are no longer sufficient to meet the needs of practitioners and societies and new methods, particularly those emphasizing active learning, individual participation, group interactions and a process-based approach should be developed and implemented (13).

We know that PBL and SGD methods are very useful methods in ethics education (1, 5-7); however, it is unknown if they have different effects on learning or not. This study aimed to compare PBL and SGD methods in teaching medical ethics.

### Method

In the first semester of the academic year 2010-2011, twenty students were introduced for ethics

course. There were 12 females and 8 males. None of them had registered for this course before. The students were randomly assigned into two groups using a table of random numbers (6 females and 4 males in each group).

Since PBL and SGD were new to most students and some faculties, both students and facilitators received separate course orientations to meet their particular needs. In the student orientation, the course director gave an overview of the course, explained the two teaching methods and suggested references.

In this study, nine members of the Medical Ethics Department (the first nine authors) acted as facilitators. Facilitators' orientation was provided using a teaching guideline.

In the PBL group, students received scenarios one week before the relative session. In the week between the sessions, students were required to search and study the learning issues they identified

in the cases, organize and summarize the key information in their learning issues to present to the group, and try to resolve the cases' ethical dilemmas. During the sessions, the students presented the learning issues they had searched and discussed and resolved the case problems under supervision of facilitators.

In the SGD group, students only had the sessions' headings. Facilitators stated the problems and questions about the heading in each session, and then the students tried to solve the problems and answer the questions by brainstorming.

Each session lasted for 1.5 hours in both methods. There was one facilitator presented at each session whose main function was to help the discussion and enable the students to think about the problems and solve them rather than act as a source of knowledge.

Twenty-five open-ended questions were used for assessment. These questions were used for summative assessment of the course too. The questions were prepared by the facilitators. Validity of these questions was confirmed by the Medical Ethics Department of Qom University of Medical Sciences. Examination papers were coded before correction. Each facilitator scored his/her own questions for all participants. Maximum score was 20 and was divided among topics equally. A course evaluation sheet was used at the end of the course to obtain the students' views about the advantages and disadvantages of each teaching method (using two open-ended questions), their satisfaction (using four point Likert scale questions: 1 = very low, 2 = relatively low, 3 = relatively high, 4 = very high), their interest to attend the sessions, and their opinion regarding the effect of teaching ethics on students' behavior. PBL students were asked if they had studied the scenarios and if they said yes, they were asked how many sessions they had searched. This sheet was anonymous but the teaching method

was assessed. Validity of the sheet was confirmed by the Medical Ethics Department of Qom University of Medical Sciences. The reliability of questionnaires based on the Chronbach's alpha coefficient of internal consistency was 0.66. Distribution and collection of the sheets was done by a person outside the research team.

### Statistics

The SPSS statistical package version 17 was used to test whether there were any statistically significant differences between the PBL and the SGD students in the mean open-ended question scores and their satisfaction rate. Both Independent Sample t-Test and Mann-Whitney Test were used. A p-value of < 0.05 was considered to be statistically significant.

### Results

#### Open-ended questions

Mean and standard deviation of scores in PBL and SGD groups were  $16.04 \pm 1.84$  and  $15.48 \pm 2.01$  respectively. In order to detect the difference between the learning outcome in PBL and SGD methods, we compared the mean of students' scores in both groups. There was no significant difference in learning outcome between the PBL and the SGD students in the mean scores as assessed by open-ended questions.

#### Course evaluation

A course evaluation sheet was used to determine the students' opinions about the course. Nineteen out of 20 students completed the course evaluation sheet (response rate = 95%). The results from questions showed no significant difference between the two groups (Table 2).

Table 2. The results of course evaluation

Variable	Response	PBL group		SGD group	
		n (%)	Mean $\pm$ SD	n (%)	Mean $\pm$ SD
Your interest to attend the sessions	Very high	3 (30.0)	3.10 $\pm$ 0.74	1 (11.1)	2.89 $\pm$ 0.60
	Relatively high	5 (50.0)		6 (66.7)	
	Relatively low	2 (20.0)		2 (22.2)	
	Very low	0 (0)		0 (0)	
Your satisfaction with the volume of content	Very high	1 (10.0)	2.50 $\pm$ 0.85	2 (25.0)	3.00 $\pm$ 0.76
	Relatively high	4 (40.0)		4 (50.0)	
	Relatively low	4 (40.0)		2 (25.0)	
	Very low	1 (10.0)		0 (0.0)	
Your satisfaction with the amount of time dedicated to each topic	Very high	0 (0.0)	2.70 $\pm$ 0.68	1 (11.1)	2.44 $\pm$ 1.01
	Relatively high	8 (80.0)		4 (44.4)	
	Relatively low	1 (10.0)		2 (22.2)	
	Very low	1 (10.0)		2 (22.2)	
Your total satisfaction with the teaching method	Very high	1 (10.0)	3.00 $\pm$ 0.47	1 (11.1)	2.78 $\pm$ 0.83
	Relatively high	8 (80.0)		6 (66.7)	
	Relatively low	1 (10.0)		1 (11.1)	
	Very low	0 (0.0)		1 (11.1)	

Effect of ethics teaching on your behavior	Very high	2 (20.0)	3.00 ± 0.67	2 (22.2)	2.67 ± 0.87
	Relatively high	6 (60.0)		2 (22.2)	
	Relatively low	2 (20.0)		5 (55.6)	
	Very low	0 (0.0)		0 (0.0)	

Some of the student comments about the advantages and disadvantages of teaching methods in the two groups were listed in Table 3.

Table 3 - Positive and negative comments about PBL and SGD

Group	Positive comments	Negative comments
PBL	Better group discussion and students' participations	Time restriction for adequate study Need to create incentives for studying
	More freshness and alertness	
	Better concentration	
	Better understanding because of studying between sessions	
	Less forgetfulness	
	More questions being raised	
	Having better knowledge of topics	
SGD	Improvement of communication skills	
	Using peers' opinions	
	Improvement in ability to think and analyze cases	Time restriction for discussion Need to create incentives for participation in discussion
	Using peers' opinions and their reasons	Engagement of the mind with problems that were not completely related to the discussion subject
	Better understanding because of thinking	
	Group discussion and students' participations	

All of the students in the PBL group stated that they studied the scenarios in the week between sessions. The mean ( $\pm$  SD) of sessions that they studied was  $10.33 \pm 4.3$  ranging from 4 to 16 sessions.

### Discussion

Despite of efforts for promotion of teaching medical ethics in Iran, the method of teaching is still lecture-based in most medical schools. A suitable teaching ethics program, however, would be based on using new methods especially those emphasizing active learning and student participation. Two key features related to the teaching of medical ethics have been widely recognized as beneficial; the first feature is actively involving students in the learning process, and the second is assessing how students apply their knowledge of ethical principles in simulated and actual situations (10). The purpose of this study was to compare PBL and SGD for teaching medical ethics through applying these methods to two separate groups of students. Although the results did not show any significant difference between the learning outcomes in either group, the mean score of PBL students was higher than SGD students. One possible explanation for the findings may be related to the nature of ethical concepts, as most ethical problems could be solved by unassisted thinking. Another explanation may be related to the smaller sample size.

However, it should be noted that although the PBL group students stated that they searched and studied between sessions, we cannot be certain that they spent enough time on problem solving and did not use their peers' search results. As the students stated, their workload did not permit them to spend enough time on search and consequently there was no significant difference between the two methods.

As mentioned in the introduction, we did not find studies comparing PBL and SGD methods. Nevertheless, the results are in agreement with those of Goodyear's study that found no significant difference in learning outcome between the traditional and PBL courses, but the PBL course was well appreciated by his study population (14). Likewise, Fesharaki et al. did not report any significant difference between scores of students in lecture and PBL groups (15). Moreover, Salimi et al. showed that lecture and SGD methods had similar effects on drug calculation skills (16). These studies had compared PBL and SGD methods with the lecture method and did not find any significant difference either.

The results of our study showed more satisfaction rate among PBL students. Hence, in 4 out of 5 questions the mean score of PBL subjects was higher than the other group even though this difference was not statistically significant. Johnston and Haughton reported that their students certainly preferred small group teaching as a way of promoting debate and discussion (17). Thus, Tan et al. found that 3-5 years after participation in the PBL

method, 68% of students perceived PBL as helpful in collaboration with colleagues, working in small groups, taking responsibility for contribution to the group and accountability to other group members (18).

In another study about students' satisfaction after SGD in a medical ethics education program, students reported greater satisfaction with self-case, presentation experience, in-class discussion, and instructor's comments, but less satisfaction with self-study and before class and post class discussion. Reported overall satisfaction score was  $3.8 \pm 0.9$  (mean  $\pm$  SD) (19). We did not assess the students' satisfaction with specific components of an SGD but the overall satisfaction mean score in both studies were similar. Also Fawzi reported that 56% of the medical students in his study preferred daily confusing ethical issues problem solving, 24% case and solution and 13.3% small group study. Only 6.7% of them chose the lecture-based method (4, 20).

The usefulness of PBL and SGD methods is obvious since students actively participate in learning, although there are disadvantages to each of these methods. In PBL the need for providing the necessary resources to students has to be considered. In our study, for instance, we had to provide ethics references such as books for students as our library did not have sufficient books. On the other hand, one important disadvantage of SDG is the need for longer sessions, since the students are generally not familiar with the topics prior to each session.

It is noteworthy that some universities have added other methods such as monthly ethics grand rounds and mandatory ethics seminars to PBL and SGD methods (1, 21). Interactive lectures and small research projects in a hospital or clinic (2) are performed as well (22). Ward rounds (7, 23) and

role-playing (24) may likewise be used along with these methods (3).

There were some limitations to our study, the most important one being the small sample size. Another limitation pertained to examining the effects of the PBL and SGD methods on areas that we did not cover in this study, for instance clinical practice. Furthermore, the students' ethical knowledge was assessed only a short time after the course, and therefore the effectiveness of each method over a longer time span could not be verified. The reliability of the open-ended questions used for the purpose of assessment was yet another limitation.

### **Conclusion**

In view of the most important limitation of this study, namely the small sample size, and taking into account the students' comments on the advantages and disadvantages of each method, we suggest PBL rather than SGD for teaching ethics. This opinion is strengthened when we consider the results of the course evaluation. Considering the process of the PBL method and unavailability of the required resources, however, this method may not be suited to ethics education under the present circumstances.

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